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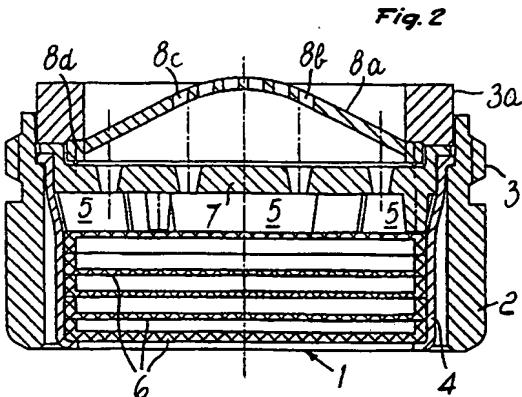
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### (54) Aerator for liquids.

(57) The aerator (1) has a body (4) having openings (5) formed therein and containing meshes (6) and a perforated plate (7). A monolithic convex diaphragm (8), defining a wall (8a), has holes (8b,8c) formed in a central region thereof and a perimetric (8d) ultrasonically welded to a seat formed in the plate (7). The convexity of the diaphragm (8) is oriented in a fluid flow direction, whereby retained particles are collected at the base of the perimeter of the diaphragm (8).



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The present invention relates to an improved aerator for liquids.

It is known that so-called aerators are widely used, which are installed at the outlet of liquid conveyance ducts and particularly of ducts conveying water to sinks, with the specific purpose of breaking the stream of fluid into parallel threads so as to make the jet that exits into the atmosphere perfectly cylindrical.

Known aerators include, according to a very common embodiment, a body usually installed in a ring associatable with the end of the duct that conveys the liquid and suitable to contain various elements, such as a pack of metal meshes and a perforated plate. A filter is furthermore installed at the end of the body on the liquid inlet side. The filter has the purpose of retaining the impurities present in the liquid, and has the shape of a mesh that covers the entire cross-section of said body.

In order to limit the flow-rate of the liquid conveyed by the duct at the end of which the aerator is installed, so as to save on the consumption of said liquid, in the known art it is possible to place on said filter a cap which is kept in position by means of an appropriate gasket and has a solid wall with a central hole, so that the passage section of the liquid is reduced and the intended purpose is thereby achieved.

The resulting complicated configuration, however, is clearly disadvantageous in terms of costs and from a functional point of view, since reassembly problems can occur every time the user disassembles the ring containing the aerator to clean the aerator itself.

There are also aerators which have, at the end of the body containing the pack of meshes, a disk provided with a central hole for limiting the flow-rate, with the exclusion of any filtering action. However, impurities entrained by the liquid become trapped below said disk and cannot be removed in any way, causing rapid loss of efficiency of the device.

An aim of the present invention is therefore to provide an improved aerator for liquids which has an extremely simple structure and allows to filter the liquid effectively before it enters the aerator itself and at the same time to limit the flow-rate of the conveyed liquid.

With this aim in view, the invention provides an improved aerator for liquids, which comprises a containment body, characterized in that it comprises a diaphragm arranged at the end of said body on the liquid inlet side and formed so as to have a solid wall which is only partially provided with liquid passage holes.

Further characteristics and advantages of the present invention will become apparent from the following description thereof, illustrated only by

way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a perspective view of the diaphragm according to the invention;

5 figure 2 is a sectional view, taken along a diametrical plane, of an aerator according to the invention inserted in a containment ring.

With reference to the above figures, the reference numeral 1 generally designates the aerator, 10 which is installed within a ring 2 adapted to be screwed at the thread 3 to the end of a liquid conveyance duct, such as, very commonly, the duct conveying water to a sink, and the reference numeral 3a designates a sealing gasket.

15 Said aerator comprises a body 4, which has openings 5 and is suitable to contain meshes 6 and a perforated plate 7.

All this occurs in a known manner.

At the end of the body 4, on the side of the 20 water inlet, there is a diaphragm 8, comprising a solid wall 8a which is convex toward the flow of fluid and has holes 8b, 8c for the passage of water exclusively in the central region and thus at the top of its convexity.

25 Advantageously, the diaphragm 8 is made of plastics, like the body 4 and the plate 7, and has a monolithic structure provided with a perimetric edge 8d that mates with a seat formed at the end of the body 4 and more specifically in the plate 7, 30 so that the entire assembly can be rigidly coupled by ultrasonic welding.

The particular shape of the described diaphragm, which is placed at the end where the water enters the aerator body, gives said diaphragm considerable functionality.

35 First of all it has the purpose of retaining the impurities present in the liquid, preventing them from entering the body of the aerator: all the retained particles slide to the base of the convex wall 40 and collect at its perimeter, thus allowing immediate cleaning once access to the body 4 has been allowed by simply unscrewing the ring 2 from the end of the liquid conveyance duct.

However, the functionality of the diaphragm 45 according to the invention is not limited to this: in fact, by virtue of the reduction in the liquid passage section caused by the presence of the solid wall region 8a that has no holes, it is capable of limiting the flow-rate of liquid conveyed by the duct at the 50 end of which it is installed, thus providing a positive effect of saving in operation.

To summarize, the diaphragm according to the invention combines the dual function of filter and flow limiter.

55 In the practical embodiment of the invention, all the liquid passage holes, which may be present in any number and have any shape, may be arranged exclusively in a peripheral region or at a median

band or at sectors, instead of being located in the central region; furthermore, the wall of the diaphragm, instead of being convex toward the flow of the fluid, may be substantially flat.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

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### Claims

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1. Aerator for liquids, comprising a containment body, characterized in that it comprises a diaphragm arranged at the end of said body on the liquid inlet side and formed so as to have a solid wall which is only partially provided with liquid passage holes.

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2. Device according to claim 1, characterized in that the solid wall of the diaphragm has liquid passage holes only at its central region.

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3. Device according to claim 1, characterized in that the solid wall of the diaphragm has liquid passage holes only at its peripheral region.

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4. Device according to claim 1, characterized in that the solid wall of the diaphragm has liquid passage holes only at a median band.

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5. Device according to claim 1, characterized in that the solid wall of the diaphragm has liquid passage holes only at sectors.

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6. Device according to one or more of the preceding claims, characterized in that the wall of the diaphragm is convex toward the flow of liquid.

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7. Device according to one or more of the preceding claims, characterized in that the diaphragm is made of plastics and has a monolithic structure including the convex wall provided with holes in the top region, delimited by a perimetric edge for connection to a seat formed at the end of said body.

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Fig. 1

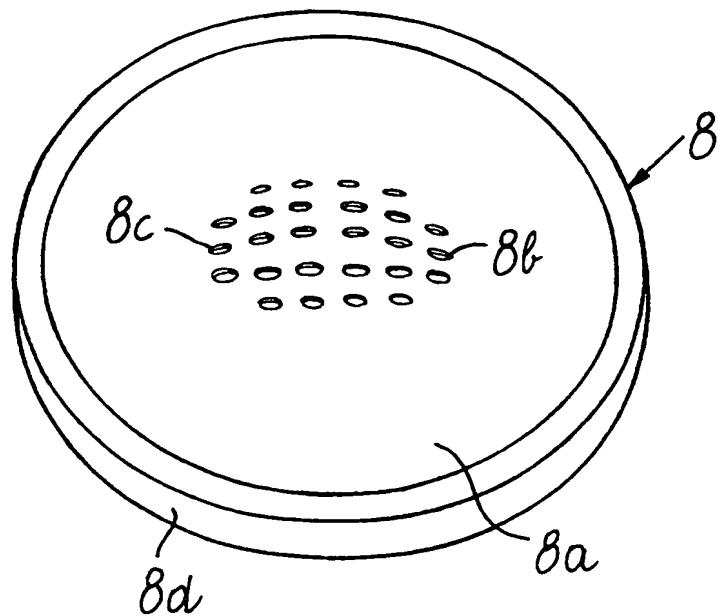
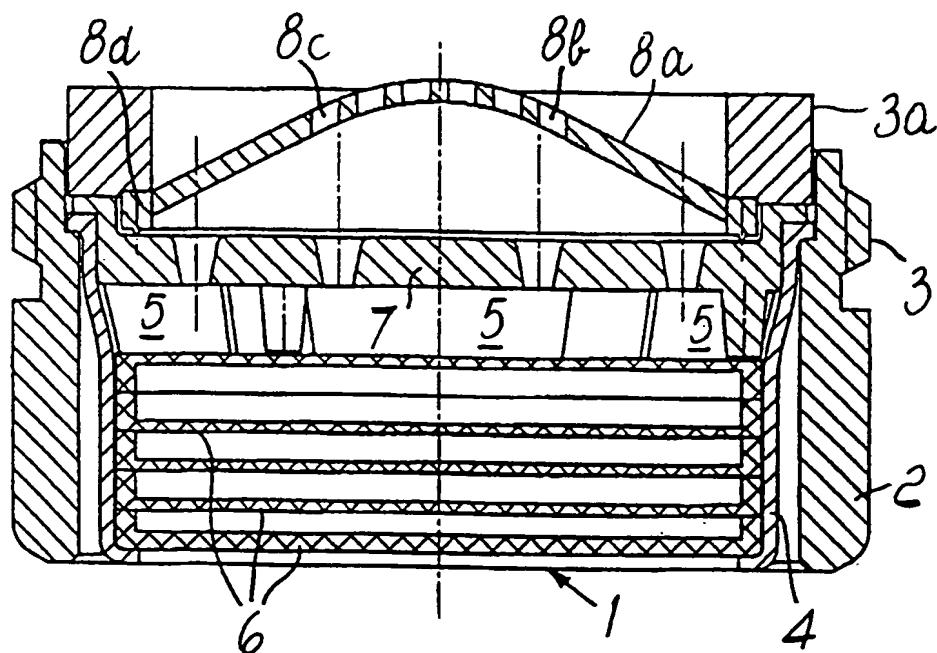


Fig. 2





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## EUROPEAN SEARCH REPORT

Application Number  
EP 94 10 7287

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.CLS)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	GB-A-625 084 (AGHNIDES) * page 3, line 94 - line 128 *	1,3 2,4-6 ---	E03C1/084
A	US-A-4 657 186 (SHAPIRO) * column 4, line 13 - line 46 *	1 2-7 ---	
P,X	US-A-5 242 119 (JARIYASUNANT) * column 2, line 43 - line 52; figure 5 *	1,4 ---	
A	EP-A-0 284 763 (DIETER WILDFANG KG) * column 4, line 30 - line 39; figures *	1,7 -----	

TECHNICAL FIELDS SEARCHED (Int.Cl.5)	
E03C	

The present search report has been drawn up for all claims		
Place of search	Date of completion of the search	Examiner
THE HAGUE		
	2 September 1994	Van Beurden, J
CATEGORY OF CITED DOCUMENTS		
X : particularly relevant if taken alone	T : theory or principle underlying the invention	
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